

3. The mesoporous silica film as recited in claim 1, wherein said thickness has a standard deviation less than $\pm 5\%$.

4. The mesoporous silica film as recited in claim 1, wherein a porosity of said mesoporous silica film is disordered.

5. A mesoporous silica film having a thickness from about $0.1 \mu\text{m}$ to about $1.5 \mu\text{m}$ and a standard deviation about said thickness, wherein said standard deviation is less than $\pm 5\%$.

*duplicate
of claim 3*

6. The mesoporous silica film as recited in claim 5, wherein a dielectric constant of said mesoporous silica film is less than 3.

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7. The mesoporous silica film as recited in claim 5, having a dielectric constant with a relative stability and an absolute stability.

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8. The mesoporous silica film as recited in claim 5, having an average pore size less than or equal to about 20 nm.

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9. The mesoporous silica film as recited in claim 5, having a porosity that is disordered.

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10. A mesoporous silica film prepared from a surfactant containing solution, comprising a porosity that is disordered, said porosity having an average pore diameter of less than or equal to about 20 nm, and a film thickness from about $0.1 \mu\text{m}$ to about $1.5 \mu\text{m}$.

11. The mesoporous silica film as recited in claim 10, having a dielectric constant less than 3, said dielectric constant having both a relative stability and an absolute stability.

Cancel claims 12-52 ✓

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09/837,885

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MJM DO. NO. 1941-76

75 12. A mesoporous silica film characterized by:
a disordered porosity, lacking a regular geometric arrangement of pores, and
characterized by an x-ray diffraction peak between about 0.75 and about 2 degrees 2-
theta;

a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

B2 76 13. A mesoporous silica film characterized by:
a disordered porosity as indicated by an absence of an XRD peak in the range
from 2 to 6 degrees 2-theta;

a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

77 14. A mesoporous film characterized by:
a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

Cancel claims 56-65 ✓

78 15. A mesoporous film having a dielectric constant less than 2.5, a film
thickness from about 0.2 μm to about 1.5 μm , and an average pore diameter less than
or equal to about 5 nm.

79 16. A mesoporous film having a thickness from about 0.2 μm to about 1.5
 μm and a standard deviation about said thickness that is less than +/- 5%.

80 17. A mesoporous silica film prepared from a surfactant containing solution, having a dielectric constant less than 3 that has both a relative stability and an absolute stability in a humid atmosphere, a film thickness from about 0.1 μm to about 1.5 μm , an average pore diameter less than or equal to about 20 nm, and a porosity that is disordered.

81 18. The mesoporous silica film as recited in claim 17, wherein disordered is indicated by the absence of an X-ray diffraction peak in the range of about 2 to about 6 degrees 2-theta.

82 19. The mesoporous silica film as recited in claim 17, wherein disordered porosity is characterized by an X-ray diffraction peak between about 0.75 and about 2 degrees 2-theta.

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Cont

[Cancel claims 71-74]

83 20. A surfactant-templated mesoporous dielectric film on a substrate prepared from a silica precursor solution by evaporation, wherein the film is characterized by disordered porosity.

84 21. The dielectric film of claim ⁸³20, wherein the silica precursor includes one or more of methyl and ethyl groups.

85 22. The dielectric film of claim ⁸³20, wherein the silica precursor includes one or more of alkyl and phenyl groups.

86 23. The dielectric film of claim ⁸³20, wherein the silica precursor includes carbon-containing groups.